

## ***Battlefield Earth – Teacher Pre -visit information***

### ***Concepts***

An invasive species is a species that moves into an ecosystem and aggressively establishes itself, which then has a negative effect on the native species in the ecosystem. An example of an invasive species here in Maryland is mile-a-minute vine. With an amazingly fast growth rate, and nasty thorns, mile-a-minute vine has the ability to completely disrupt and degrade an ecosystem.

### ***Program Activities***

In this field experience, students will learn about several of Maryland's invasive plant species and the impact they can have on an ecosystem.

Students will have the opportunity to help pull invasive plant species on site and possibly plant native species on site.

There is also an interactive game that students will play in order to demonstrate the concept of Invasive Species.

### ***Pre-visit Preparation***

Download and go through the **Battlefield Earth Pre-visit power point** with your students. Power Point can be viewed and downloaded at:

<https://www.dropbox.com/s/ue7uzg2hs8a3k9a/Battlefield%20Earth%20Powerpoint.pptx?dl=0>

### ***Vocabulary***

**Invasive Species** – a plant or animal that is not native to a specific location (an [Introduced species](#)); and has a tendency to spread, which is believed to cause damage to the environment, human economy and/or human health

**Soil Erosion** - the actions of exogenic processes (such as water flow or wind) which remove soil and rock from one location on the Earth's crust, then transport it to another location where it is deposited.

**Native Species** – can be either endemic (found only within a particular region) or indigenous (found both within the region and elsewhere).

**Ecosystem** - a system formed by the interaction of a community of organisms with their environment

## *Battlefield Earth –Post-visit Activities*

Dear Teachers,

We hope you enjoyed your trip to Robinson Nature Center. The following two activities – a web quest and an invasive species “Wanted” Poster project, can be used to follow up on or review information learned during the trip.

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## *Alien Invaders Web Quest Guide*

### Section I

1) Use the links below to research at least 4 of the following invasive species.

Japanese Stiltgrass - <http://www.invasivespeciesinfo.gov/plants/stiltgrass.shtml>

Purple Loosestrife- <http://www.invasivespeciesinfo.gov/aquatics/loosestrife.shtml>

Zebra Mussel- <http://www.dnr.state.md.us/irc/zebra/zmussel1.html>

Wineberry- <http://www.nps.gov/plants/alien/pubs/midatlantic/ruph.htm>

Wavyleaf Basket Grass- [http://www.dnr.state.md.us/wildlife/Plants\\_Wildlife/WLBG/index.asp](http://www.dnr.state.md.us/wildlife/Plants_Wildlife/WLBG/index.asp)

Multi-flora Rose- <http://www.invasivespeciesinfo.gov/plants/multiflorarose.shtml>

Mile-a-Minute- <http://www.nps.gov/plants/alien/fact/pepe1.html>



**Howard County**  
**RECREATION & PARKS**

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6692 Cedar Lane, Columbia, MD 21044  
[www.howardcountymd.gov/RobinsonNatureCenter.htm](http://www.howardcountymd.gov/RobinsonNatureCenter.htm)  
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- 2) Analyze and report on how each of the 4 invasive species chosen affect the food web in the ecosystem they invaded.
- 3) Explain how the number and types of organisms an ecosystem can support (diversity and carrying capacity) is affected by each invasive species.

## **Section II**

Using the Web site below, compare how different invasive species are introduced into ecosystems in which they are not natives.

<http://www.nwf.org/wildlife/threats-to-wildlife/invasive-species.aspx>

## **Section III**

Using the Web site below, propose ways people can help stop the introduction of invasive species into new ecosystems.

[http://www.dnr.state.md.us/wildlife/Plants\\_Wildlife/invhelp.asp](http://www.dnr.state.md.us/wildlife/Plants_Wildlife/invhelp.asp)

## **Show Your Stuff (all Sections)**

Prepare a multimedia presentation (such as PowerPoint, youtube video or website) for the Invasive Species Council that uses convincing evidence supported by real data and that:

- 1) Clearly states your position on the issue:
- 2) Uses examples and evidence you found in your research to persuade your audience
- 3) Includes a bibliography of sources used

# Teacher Grading Rubric

## Invasive Species “Wanted” Poster Project

Students should pick an invasive species and create a FBI “Most Wanted” poster on the species. Below is a grading rubric for scoring the posters.

- \_\_\_\_\_ 1. Picture of the Invasive Species (6 points) - Either printed or hand drawn. Pictures should be in color and large enough to see.
  
- \_\_\_\_\_ 2. Identifying Characteristics of the Invasive Species (8 points) – Explanation of what the plant/animal looks like and how often it reproduces (size, markings, number offspring with each cycle of reproduction and number of times per year that reproduction occurs.)
  
- \_\_\_\_\_ 3. Crimes Committed (10 points) – Explanation of what the animal/plant has done to the local habitat into which it was introduced. Includes predator/ prey relationships with local species. Includes effects on local business and humans.
  
- \_\_\_\_\_ 4. Last Seen (8 points) – Explanation of where the plant/animal originated from including a possible way it could have traveled from home area to new habitat.
  
- \_\_\_\_\_ 5. Suspected Hideouts (8 points) – Explanation of where the invasive’s new habitat is located. Is the new habitat different from its home area? How?
  
- \_\_\_\_\_ 6. Controls (10 points) – Explanation of how the invasive is being controlled/ what is being done to stop the spread of the alien species.

\_\_\_\_\_/50 Total Points

## *Student Handout*

# ***Invasive Species “Wanted” Poster Project***

### **Introduced Species**

**Task:** Choose an invasive species and create an FBI “Most Wanted” poster. The poster will be graded according to the following criteria:

1. **Picture of the Invasive Species (6 points)** - Either printed or hand drawn. Pictures should be in color and large enough to see.
2. **Identifying Characteristics of the Invasive Species (8 points)** – Explanation of what the plant/animal looks like and how often it reproduces (size, markings, number offspring with each cycle of reproduction and number of times per year that reproduction occurs.)
3. **Crimes Committed (10 points)** – Explanation of what the animal/plant has done to the local habitat into which it was introduced. Includes predator/ prey relationships with local species. Includes effects on local business and humans.
4. **Last Seen (8 points)** – Explanation of where the plant/animal originated from including a possible way it could have traveled from home area to new habitat.
5. **Suspected Hideouts (8 points)** – Explanation of where the invasive’s new habitat is located. Is the new habitat different from its home area? How?
6. **Controls (10 points)** – Explanation of how the invasive is being controlled/ what is being done to stop the spread of the alien species.

**Total = 50 possible points**

**Logistical Concerns:** You may work with a partner or alone. You must have at least one slide for each component on the rubric (some may need to be divided). You may select any invasive species but they are first come, first served. Check with me to see the availability of the species of your choice before you begin researching. You will have 2 days in the media center after which presentations will begin.

**Background Information:** Go to the Environmental Literacy Council’s web page and read their information on Non-native Species: <http://www.enviroliteracy.org/article.php/40.html>

**Research:** Obtain more information on your species by doing a web search. Be sure to document your sources. (title and address of all web pages used – put these on back of your poster)

Some options are:

Species profile page of Invasivespecies.gov: <http://invasivespecies.gov/profiles/main.shtml>

Biodiversity and Conservation: A Hypertext Book by Peter J. Bryant:  
<http://darwin.bio.uci.edu/~sustain/bio65/lec09/b65lec09.htm>



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**Project Expectations:**

1. **Wanted Poster**—A brief version of the power point presentation. Be sure to include a picture, crimes committed, last seen, suspected hideouts and a reward.
2. **Presentation** - You will share the information on your species with the class in a power point presentation (3- 5 minutes). When planning your presentation, keep in mind all of the concepts we have studied that relate to the topic and try to tie them in.
3. **Bibliography** – The last slide of your power point. Give title and location of web resources used.